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Validated Question Bank for Assessing Pilot Knowledge of Aviation Weather Appendix: Weather Product Interpretation Questions

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Validated Question Bank for Assessing Pilot Knowledge of Aviation Weather
Appendix: Weather Product Interpretation Questions

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Introduction

This appendix supplements the Thomas et al. (2022) paper titled “Validated Question Bank for Assessing Pilot Knowledge of Aviation Weather” which validates a set of weather product interpretation questions that can be used to measure a pilot’s understanding of weather. The assessment consists of 15 weather product interpretation topics which can be administered as a single 65-question survey or, as in the Thomas et al. (2022) study, two assessments of 33 and 32 questions each separated by topic. The set of 65 questions can be found in this appendix along with a table which demonstrates how to separate the questions into two separate assessments. Correct answers are highlighted in the appendix.

Test Contents and Question Numbers

Category	Product	Number of Questions	Question Number	Test
<i>Observation Products</i>	GFA	4	59, 60, 61, 62	1
	METARs	8	5, 8, 10, 14, 25, 27, 28, 48	1
	PIREPs	3	22, 42, 63	1
	Radar	8	1, 6, 15, 16, 38, 45, 54, 55	1
	Satellite	6	3, 7, 20, 21, 29, 52	1
	Winds Aloft	3	9, 32, 33	1
	Station Plots	4	12, 31, 37, 51	2
<i>Forecast Products</i>	CIP/FIP	3	39, 44, 56	2
	G-AIRMETs	5	17, 30, 34, 49, 57	2
	GTG	4	26, 40, 64, 65	2
	LL SigWx	2	35, 53	2
	SIGMETs	8	4, 36, 41, 43, 46, 50, 58, 47	2
	Surface Prog	3	18, 23, 24	2
	TAFs	3	11, 13, 19	2
<i>Product Attributes</i>	Flying in Thunderstorms	1	2	2

Appendix

1. What is the minimum distance by which thunderstorms identified on the radar as intense or severe should be avoided?

- a. 5 miles.
- b. 10 miles.
- c. 15 miles.
- d. 20 miles.

2. If a pilot unintentionally penetrates a thunderstorm, the best course of action is to:

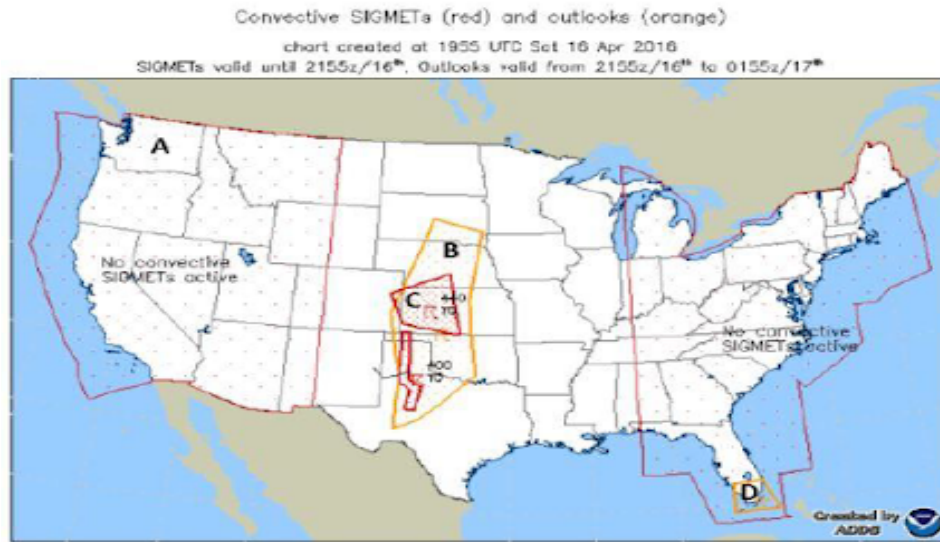
- a. Begin a constant rate turn for 180° to reverse course and exit the storm.
- b. Maintain the current heading through the storm at constant attitude until clear of the storm.
- c. Increase power as needed to hold the current altitude until clear of the storm.
- d. Dive to gain additional airspeed until clear of the storm.

3. Infrared satellite images such as the one below show:



- a. Sunlight reflected from the Earth's surface or clouds.
- b. Temperatures of the Earth's surface or clouds.
- c. Water vapor in the atmosphere.
- d. Atmospheric particulate matter.

4. The areas identified in orange in the image below are:



- Convective SIGMETs valid until 2155Z.
- Convective outlooks valid until from 1955 to 2155Z.
- Convective SIGMETs valid at 0155Z.
- Convective outlooks valid from 2155Z to 0155Z.

5. Based on the METAR below, the conditions at Minneapolis/Saint Paul International Airport (KMSP) are _____ and the ceiling is _____.

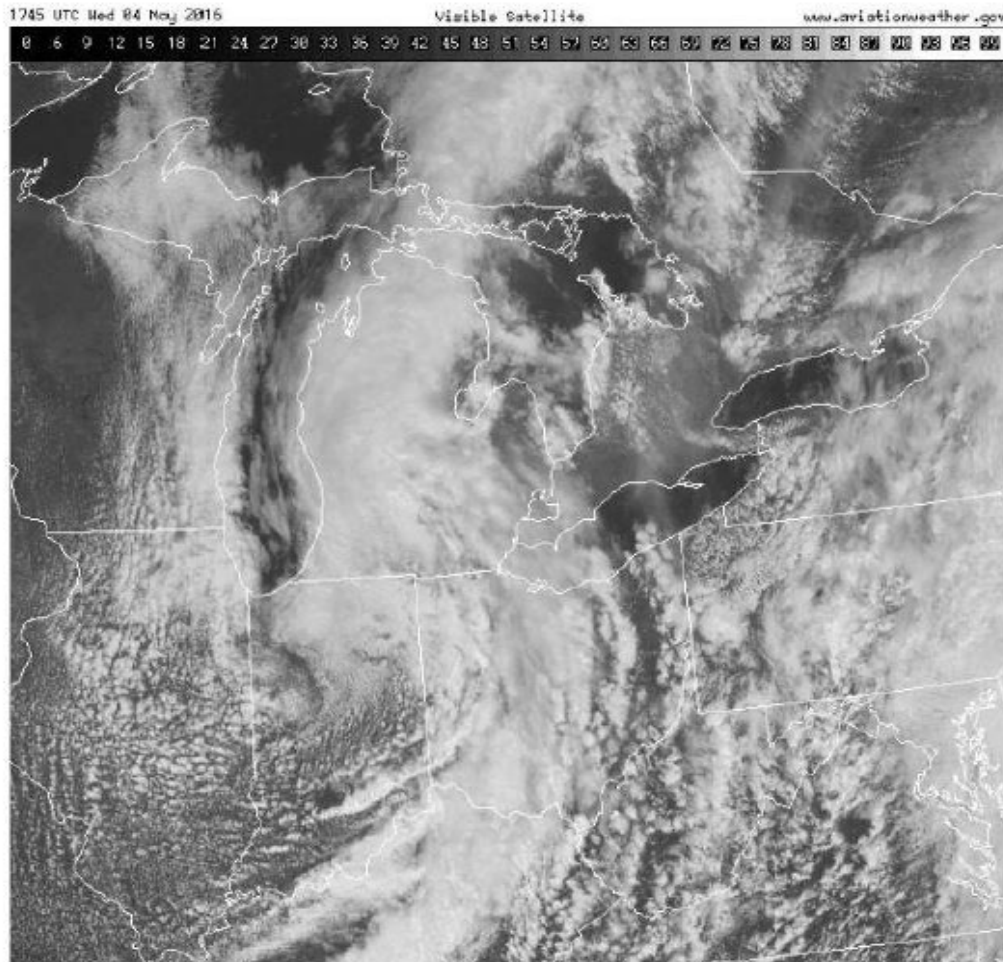
KMSP 181539z 1801KT 3SM -SN SCTO15 BKN028 OVC060 M10/M14 A3009 RMK AO2 P0001 T11001139

- IFR; 2,800 feet MSL.
- VFR; 2,800 feet AGL.
- VFR; 6,000 feet AGL.
- IFR; 6,000 feet MSL.

6. The best use of NEXRAD WSR 88-D radar information for thunderstorm avoidance would be to:

- Identify general regions of echoes to avoid the entire thunderstorm area.
- Plan a course to navigate safely through gaps between thunderstorm cells.
- Plan a course that remains at least 15 nautical miles horizontal distance from the closest thunderstorm.
- Plan a course that remains at least 5 nautical miles horizontal distance from the closest thunderstorm.

7. Visible satellite images such as the one below show:



a. Sunlight reflected from the Earth's surface or clouds.

b. Temperatures of the Earth's surface or clouds.

c. Water vapor in the atmosphere.

d. Atmospheric particulate matter.

8. Based on the METAR below, the conditions at the Rapid City Regional Airport (KRAP) are _____ and the ceiling is _____.

KRAP 181339Z 18015KT 2SM -SN SCT010 BKN025 OVC050 M10/M14 A3009 RMK AO2 P0001 T11001139

a. IFR; 2,500 feet MSL.

b. IFR; 2,500 feet AGL.

c. VFR; 5,000 feet MSL.

d. VFR; 5,000 feet AGL.

9. Using the winds aloft and temperature chart below, the wind speed at 3,000 feet over Springfield, MO (SGF) valid between 14-21Z would be:

FDIUS1
 DATA BASED ON 281200Z
 VALID 281800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
BRL	3413	3422-01	3230-06	2935-07	2941-19	2947-32	295449	285757	285756
DBQ	3308	3522-02	3423-09	3135-11	2951-20	2958-33	296349	296558	285555
DSM	1505	2717+02	2923-05	3024-11	2834-19	2843-32	285149	295457	285660
GCK		2316+12	2321+06	2427-02	2540-19	2543-30	264646	255955	266464
GLD		2211	2412+04	2516-03	2425-19	2529-31	264747	256656	266163
ICT	1824	2020+05	2424+00	2632-04	2746-17	2740-29	275045	265655	266465
SLN	1924	2022+05	2321-01	2530-05	2740-17	2733-30	274946	276455	266765
CGI	3205	3317+02	3021+01	2923-04	2935-18	2953-29	296645	287754	277558
COU	3207	3416+02	3415-04	2826-05	2829-18	2841-30	296047	287256	286559
MKC	2214	2509+03	2907-05	2924-06	2728-17	2736-30	285447	286956	286561
SGF	9900	9900+03	2913-02	2923-04	2835-17	2841-29	285845	286754	277063
STL	3109	3322+01	3222-03	2833-04	2929-19	2938-31	295547	297155	286357
DIK		1421+02	1614-04	2211-08	2119-21	2430-35	265152	276960	264360
OMA	2217	2322+04	2511-04	2817-09	2727-18	2735-31	284348	294556	285062
ONL		2119+06	2112-02	2709-08	2818-18	2831-32	283648	274657	274664
ABR	1210	1313+01	2010-05	2616-10	3022-20	2828-34	284650	285759	284260
RAP		1915+08	2316+01	2615-06	2317-20	2430-33	264549	255258	265063
GRB	3511	3522-04	3422-11	3122-15	3034-25	2950-37	306449	306354	284852

- From the ENE at 100 knots.
- Light and variable.
- From the WSW at 10 knots.
- From the WSW at 100 knots.

10. While planning your trip to Des Moines, IA, you look at the current METAR (below) to check the winds. Referring to the METAR, what is the reported wind direction at the Des Moines International Airport (KDSM)?

KDSM 051653Z 15015G24KT 120V180 3SM -SN BKN023 OVC034 M10/M14 A3010
 RMK AO2 P0001 T11001139

- Toward the southeast.
- From the southeast.
- Toward the southwest.
- Varying from the southeast to south.

11. Referring to the below TAF, what is the prevailing ceiling between the 10th of the month at 21Z to the 11th of the month at 00Z?

KPIA 101745Z 1018/1118 18016G25KT 6SM -RA BR SCT020 OVC040

TEMPO 1018/1021 2SM TSRA BR BKN015CB

FM102100 20014G23KT 4SM -RA BR SCT007 OVC015

TEMPO 1021/1024 1 1/2SM SHRA BR BKN007

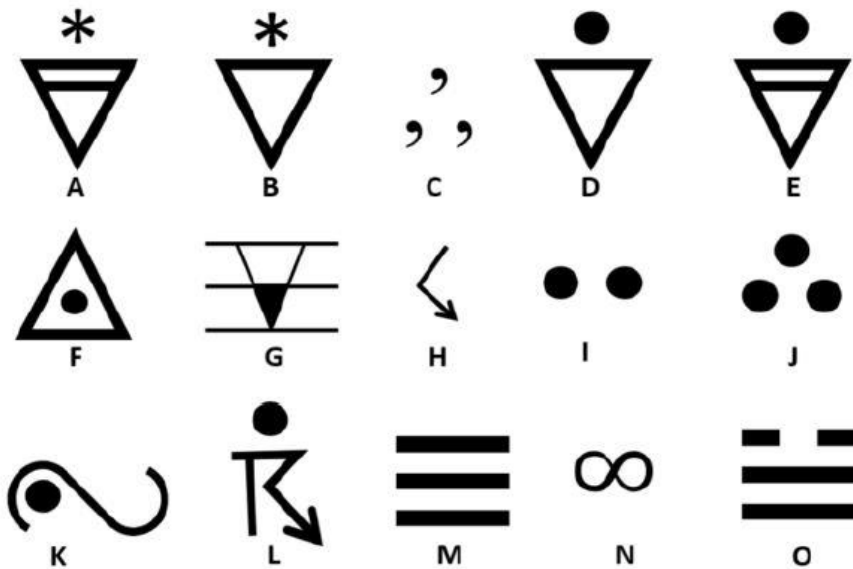
FM110100 23010KT 4SM -RA BR SCT006 OVC012

FM110400 35006KT 6SM BR VCSH SCT010 OVC020

FM110800 34003KT P6SM BKN050 TEMPO 1112/1115 BKN030

- a. No ceiling is forecast during this period
- b. 700 feet MSL
- c. 1,500 feet MSL
- d. 1,500 feet AGL

12. Select the letter corresponding to the symbol that would be coded as “-FZRA” on a METAR.



- a. Letter A
- b. Letter B
- c. Letter F
- d. Letter K

13. Referring to the below TAF, what is the forecasted weather for 01Z at Atlanta International Airport (KATL)?

KATL 221458Z 2215/2318 20005KT 4SM -SHRA BR SCT008 BKN015 OVC080

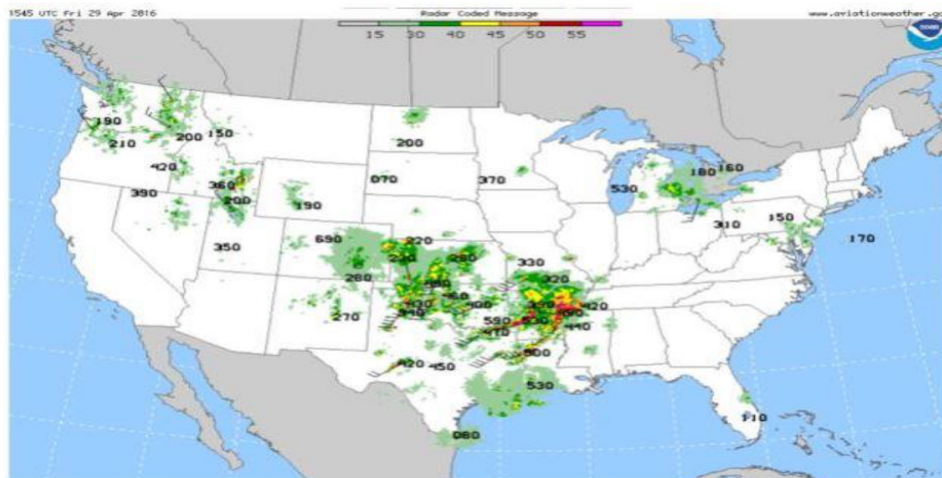
FM221800 22007KT P6SM VCSH SCT025 BKN060

TEMPO 2220/2223 4SM TSRA BR BKN025CB

FM230200 27008KT P6SM SCT040

FM230600 31006KT P6SM SKC

FM231400 34011KT P6SM SKC



- a. Light rain showers.
- b. Thunderstorms with moderate rain and mist.
- c. No weather.
- d. Showers in the vicinity.

14. In the METAR remarks for your destination airport you notice the comment “CB DSNT N MOV N.” Based on this information, which of the following is true?

- a. Cumulonimbus clouds are north but within 5 nautical miles of the airport and approaching the airport.
- b. Cumulonimbus are less than 10 statute miles north of the airport and approaching the airport.
- c. Cumulonimbus clouds are less than 10 statute miles north of the airport and moving away from the airport.
- d. Cumulonimbus clouds are more than 10 statute miles north of the airport and moving away from the airport.

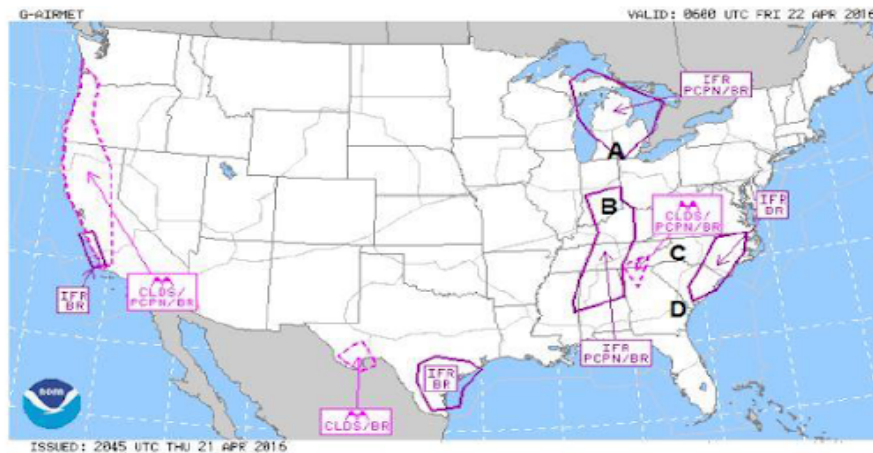
15. This radar product displays the maximum echo reflectivity above a specific location on the ground from an individual radar?

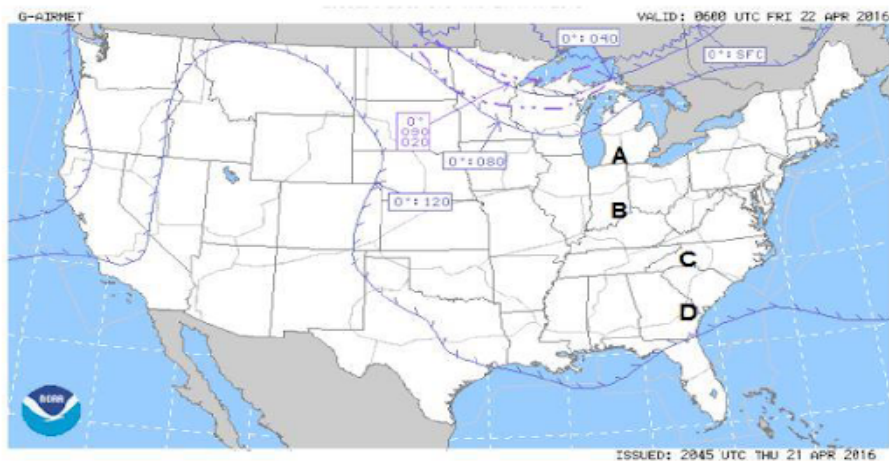
- a. Base reflectivity.
- b. Composite reflectivity.**
- c. Radar Mosaic.
- d. Radar storm cell motion reflectivity.

16. Examine the RADAR Coded Message product below. What do the bold three-digit identifiers (e.g., 370 over southern Minnesota) indicate?

- a. Storm motion direction.
- b. Storm motion speed.
- c. Approximate radar echo tops in hundreds of feet.**
- d. Altitude of maximum reflectivity in hundreds of feet.

17. Examine the four Graphical AIRMETs below, all of which are valid at 06Z. What potential hazards exist on a flight between points A and B below 10,000 feet?





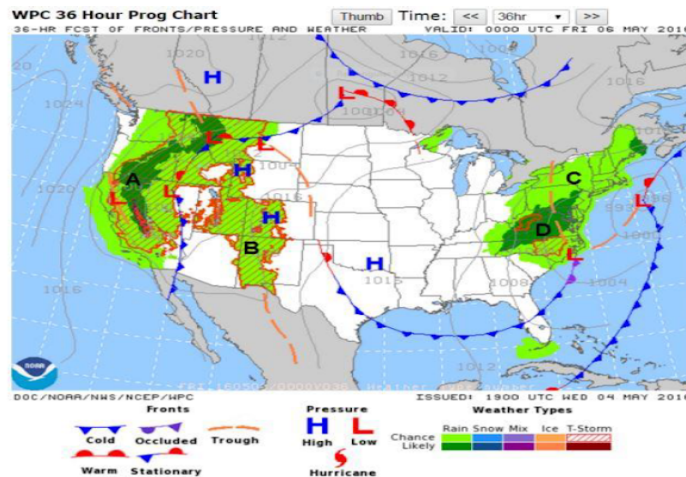
a. Moderate turbulence, moderate icing, IFR conditions.

b. Moderate icing, IFR conditions.

c. Moderate turbulence, IFR conditions.

d. Moderate icing, moderate turbulence.

18. Examine the surface prognosis chart below. Which of the below best describes the expected precipitation for location D at the valid time of the chart?



- a. Chance of rain with a chance of thunderstorms.
- b. Rain likely with no thunderstorms expected.**
- c. Chance of rain with no thunderstorms expected.
- d. Rain likely with a chance of thunderstorms.

19. Referring to the below TAF, for which time period below is the TAF considered to be valid?

KPIA 101745Z 1018/1118 18016G25KT 6SM -RA BR SCT020 OVC040

TEMPO 1018/1021 2SM TSRA BR BKN015CB

FM102100 20014G23KT 4SM -RA BR SCT007 OVC015

TEMPO 1021/1024 1 1/2SM SHRA BR BKN007

FM110100 23010KT 4SM -RA BR SCT006 OVC012

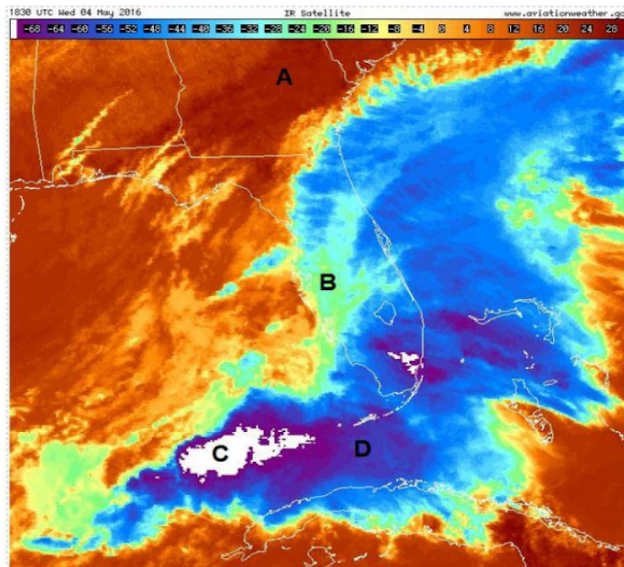
FM110400 35006KT 6SM BR VCSH SCT010 OVC020

FM110800 34003KT P6SM BKN050

TEMPO 1112/1115 BKN030

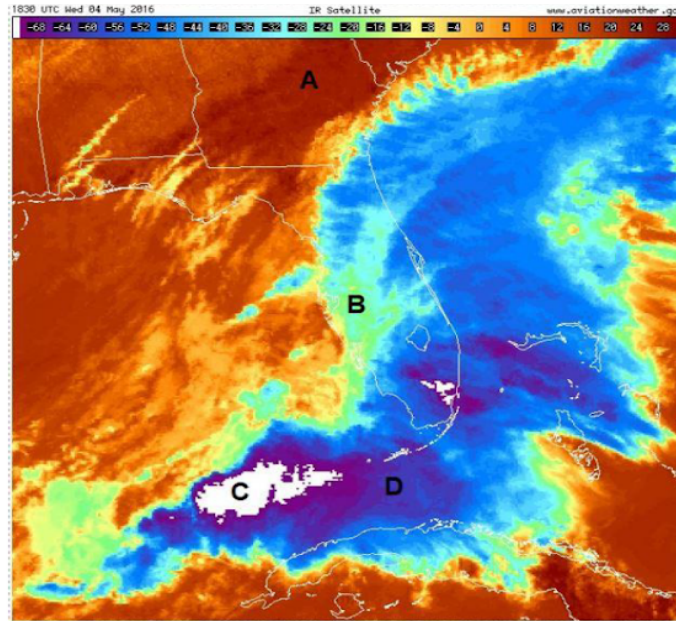
- a. The 10th of the month from 1745Z to the 11th of the month at 1845Z.
- b. The 10th of the month from 1745Z to the 11th of the month at 1800Z.
- c. The 10th of the month from 1800Z to the 11th of the month at 1800Z.**
- d. The 10th of the month from 1800Z to the 11th of the month at 1845Z.

20. Given the infrared (color) satellite image, which location would most likely be cloud free?



- a. A.
- b. B.
- c. C.
- d. D.

21. Given the infrared (color) satellite image below, the clouds with the highest vertical extent would most likely be found at which location?



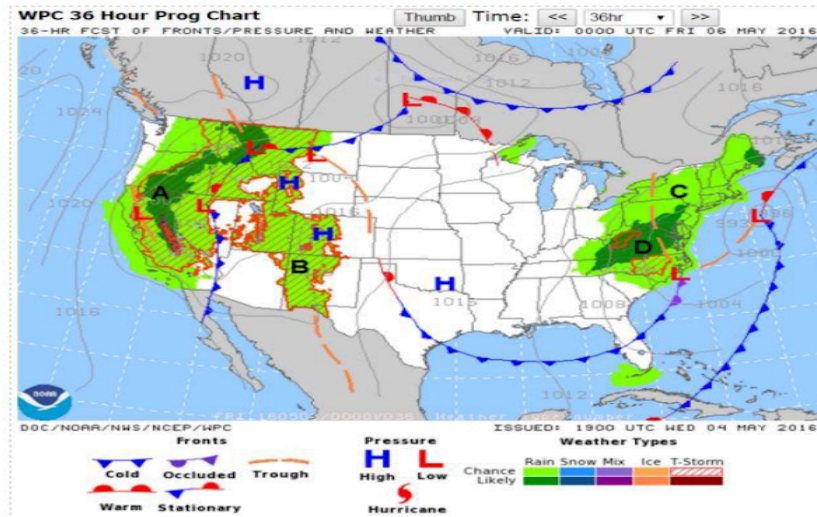
- a. A.
- b. B.
- c. C.
- d. D.

22. Referring to the PIREP below, at what altitude was moderate turbulence reported?

UA /OV RLG290020/TM 2200/FL080/TP WW24/TA M02/TB MOD /RM FROM ZDV

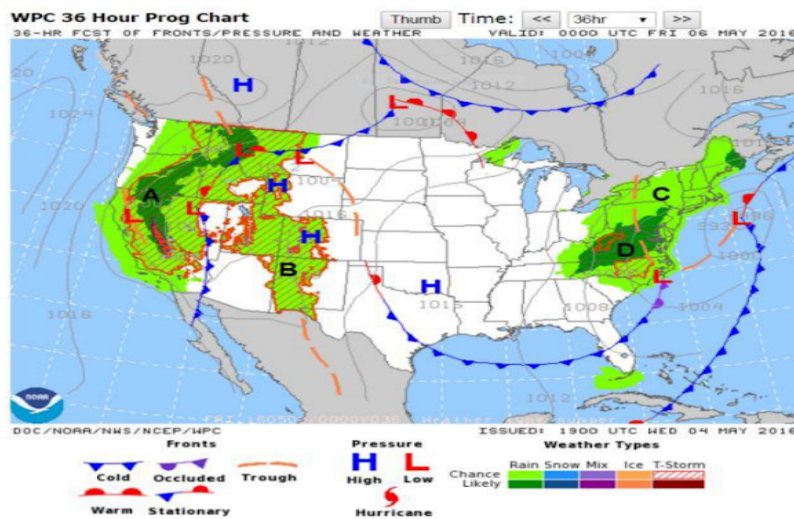
- a. Unknown.
- b. 8,000 feet MSL.
- c. 2,9000 feet MSL.
- d. 2,2000 feet MSL.

23. Examine the surface prognosis chart below. Which of the choices best describes the expected precipitation for location A at the valid time of the chart?



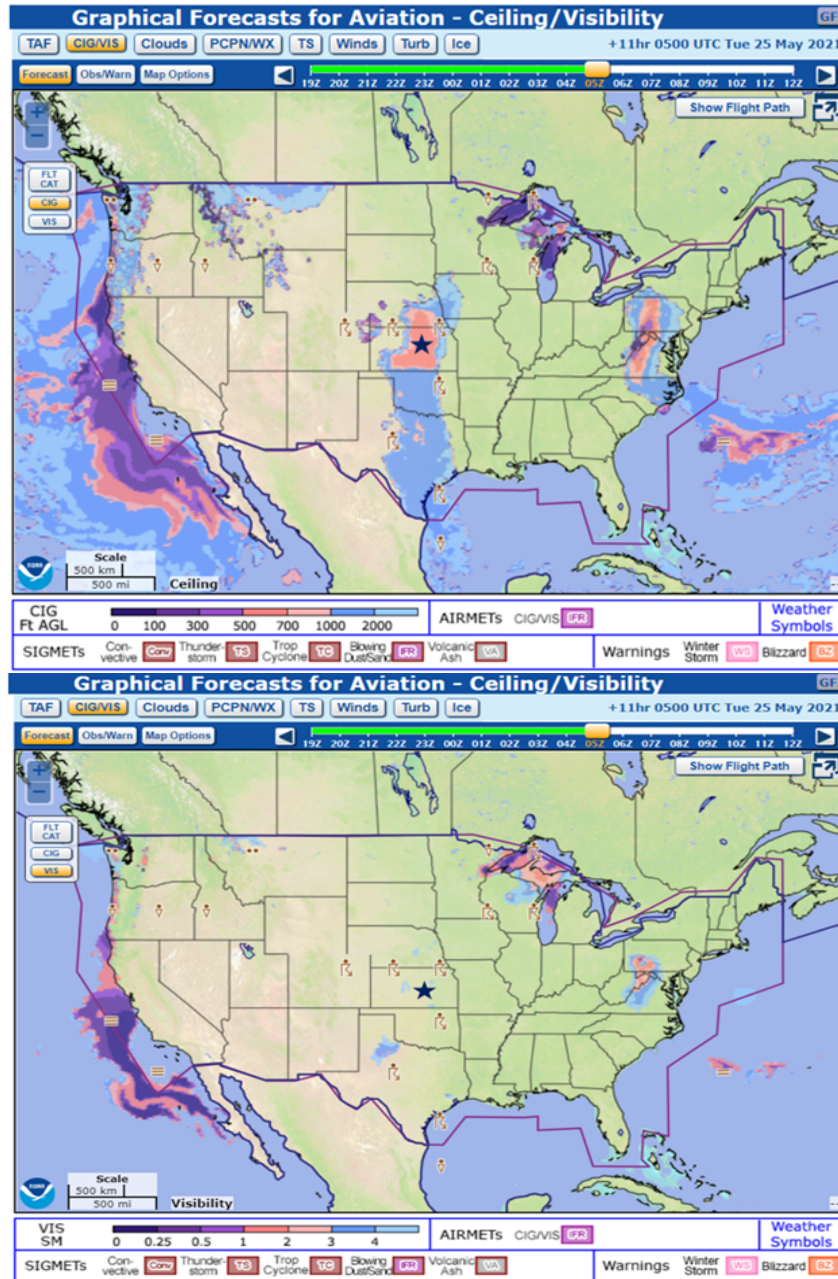
- a. Chance of rain with a chance of thunderstorms.
- b. Rain likely with a chance of thunderstorms.**
- c. Rain and thunderstorms are both likely.
- d. Rain likely with no thunderstorms expected.

24. The surface prognosis chart is representative of the expected weather conditions for what time?



- a. 1900Z on 04 May 2016.
- b. 0000Z ON 06 May 2016.**
- c. 0700Z on 05 May 2016.
- d. 1200Z on 07 May 2016.

25. Examine the two Graphical Forecasts for Aviation Ceiling/Visibility products. The top shows the ceiling information while the bottom shows the visibility. Based on these two products, the forecasted IFR flight category conditions in central Kansas (identified with a star) are most likely caused by:

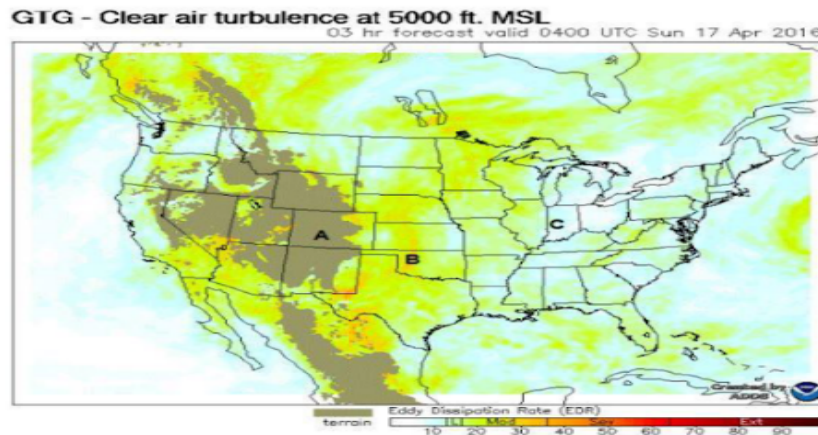


a. Low ceilings.

b. Low visibility.

c. A combination of low ceiling and low visibility.

26. Examine the Graphical Turbulence Guidance (GTG) product below. What potential hazard is shown for the region labeled “A” at 5,000 feet MSL?



- a. Light turbulence.
- b. Moderate turbulence.
- c. Extreme turbulence.
- d. None; 5,000 feet is below the terrain.

27. While planning your trip to Chicago Midway International Airport (MDW), you look at the METAR to check the winds. Using the METAR shown below, what does 170V230 mean?

KMDW 101427Z 20018G25KT 170V230 2SM -SN BKN023 OVC034 M10/M14 A3010
RMK AO2 P0001 T11001139

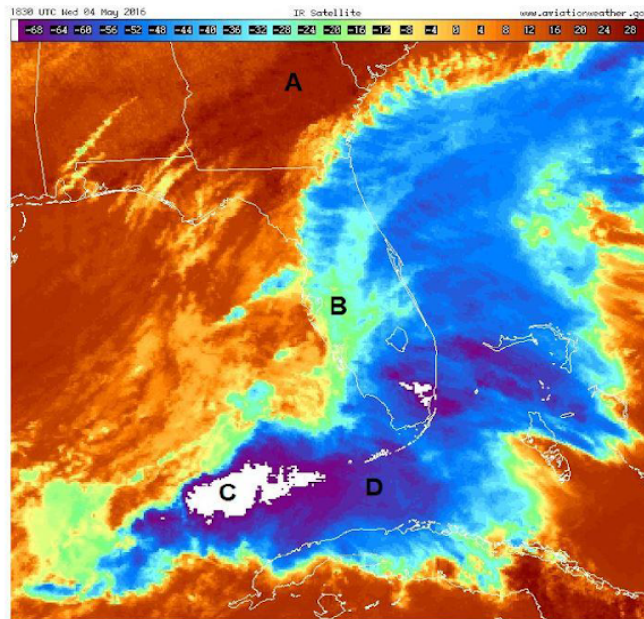
- a. Variable ceiling from 1,500 feet AGL and 2,100 feet AGL.
- b. Variable RVR from 1,700 feet and 2,300 feet.
- c. Variable wind direction from 170 through 230.
- d. Variable surface visibility from 1.70 SM and 2.30 SM.

28. You are flying to Oklahoma City, Oklahoma (KOKC) in July. You are concerned about thunderstorms. Using the METAR below, which of the following statements is true?

KOKC 150953Z 29010KT 5SM -RA SCT017 OVC030 21/19 A2998 RMK AO2 P0001 TS
DSNT W MOV E

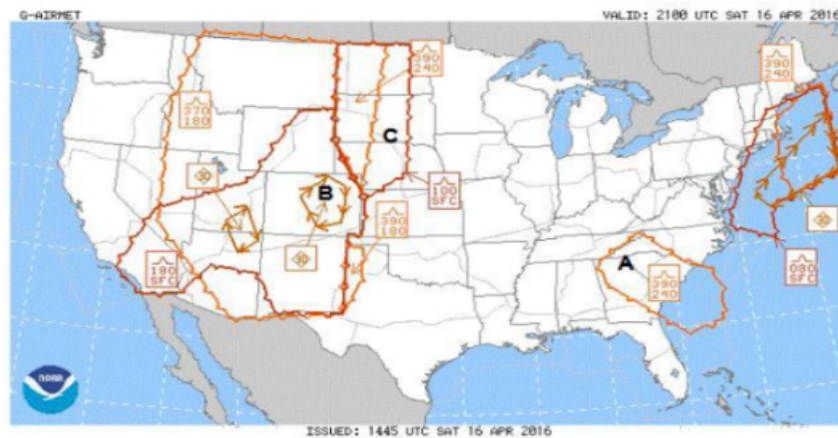
- a. Thunderstorms are moving towards the airport.
- b. Thunderstorms are moving away from the airport.
- c. Thunderstorms are reducing the visibility to 5 SM.
- d. There are no thunderstorms currently being reported.

29. The legend at the top of the infrared (color) satellite image below indicates the:



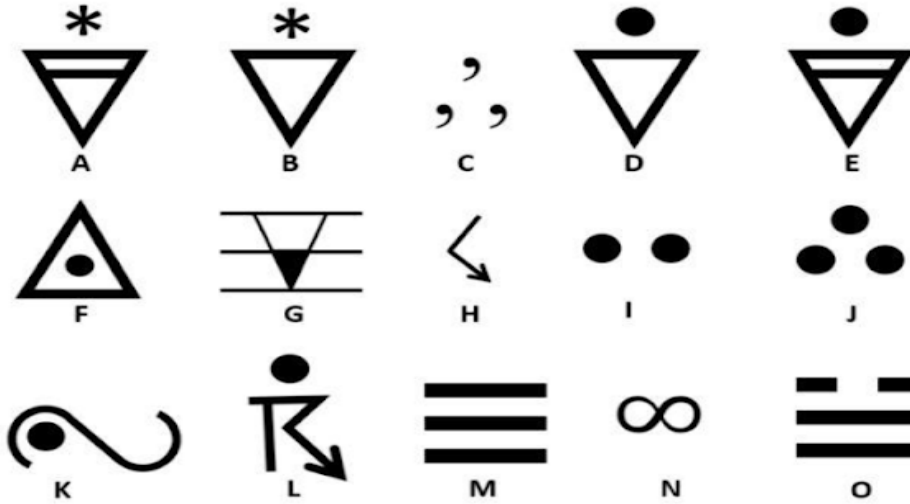
- a. Temperature in degrees Celsius of the Earth's surface or clouds.
- b. Water vapor amounts in grams per cubic meter in the atmosphere.
- c. Amount of atmospheric particulate matter in parts per million.
- d. Percent of sunlight reflected from the Earth's surface or clouds.

30. Examine the G-AIRMET product below valid at 21Z. The region identified with the letter B is expected to have:



- a. Moderate turbulence and low-level wind shear.
- b. Low-level wind shear.
- c. Strong surface winds.
- d. Moderate turbulence and strong surface winds.

31. Select the letter corresponding to the symbol that would be coded as “RA” on a METAR.



- a. Letter C.
- b. Letter D.
- c. Letter I.
- d. Letter J.**

32. Using the Winds Aloft chart below, the wind direction and speed at 6,000 feet MSL over Des Moines, IA (DSM) valid between 14-21Z would be:

FD1US1
 DATA BASED ON 281200Z
 VALID 281800Z FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT	3000	6000	9000	12000	18000	24000	30000	34000	39000
BRL	3413	3422-01	3230-06	2935-07	2941-19	2947-32	295449	285757	285756
DBQ	3308	3522-02	3423-09	3135-11	2951-20	2958-33	296349	296558	285555
DSM	1505	2717+02	2923-05	3024-11	2834-19	2843-32	285149	295457	285660
GCK		2316+12	2321+06	2427-02	2540-19	2543-30	264646	255955	266464
GLD		2211	2412+04	2516-03	2425-19	2529-31	264747	256656	266163
ICT	1824	2020+05	2424+00	2632-04	2746-17	2740-29	275045	265655	266465
SLN	1924	2022+05	2321-01	2530-05	2740-17	2733-30	274946	276455	266765
CGI	3205	3317+02	3021+01	2923-04	2935-18	2953-29	296645	287754	277558
COU	3207	3416+02	3415-04	2826-05	2829-18	2841-30	296047	287256	286559
MKC	2214	2509+03	2907-05	2924-06	2728-17	2736-30	285447	286956	286561
SGF	9900	9900+03	2913-02	2923-04	2835-17	2841-29	285845	286754	277063
STL	3109	3322+01	3222-03	2833-04	2929-19	2938-31	295547	297155	286357
DIK		1421+02	1614-04	2211-08	2119-21	2430-35	265152	276960	264360
OMA	2217	2322+04	2511-04	2817-09	2727-18	2735-31	284348	294556	285062
ONL		2119+06	2112-02	2709-08	2818-18	2831-32	283648	274657	274664
ABR	1210	1313+01	2010-05	2616-10	3022-20	2828-34	284650	285759	284260
RAP		1915+08	2316+01	2615-06	2317-20	2430-33	264549	255258	265063
GRB	3511	3522-04	3422-11	3122-15	3034-25	2950-37	306449	306354	284852

- a. 150 at 05 knots.
- b. 270 at 02 knots.
- c. 270 at 17 knots.
- d. 240 at 23 knots.

33. Using the winds aloft and temperature chart below, the temperature at 3,000 feet over Des Moines, IA (DSM) valid between 14-21Z would be:

```

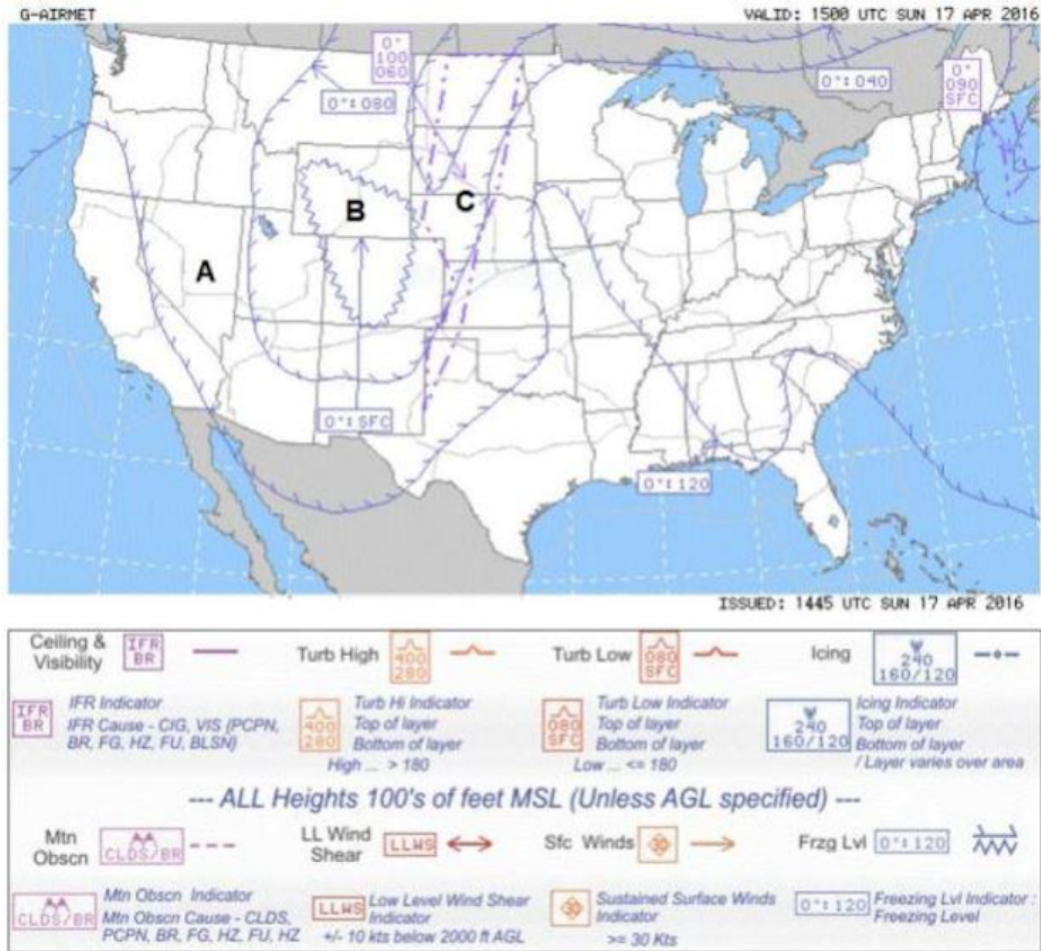
FD1US1
DATA BASED ON 281200Z
VALID 281800Z   FOR USE 1400-2100Z. TEMPS NEG ABV 24000

FT 3000    6000    9000    12000    18000    24000    30000    34000    39000
BRL 3413  3422-01  3230-06  2935-07  2941-19  2947-32  295449  285757  285756
DBQ 3308  3522-02  3423-09  3135-11  2951-20  2958-33  296349  296558  285555
DSM 1505  2717+02  2923-05  3024-11  2834-19  2843-32  285149  295457  285660
GCK      2316+12  2321+06  2427-02  2540-19  2543-30  264646  255955  266464
GLD      2211      2412+04  2516-03  2425-19  2529-31  264747  256656  266163
ICT 1824  2020+05  2424+00  2632-04  2746-17  2740-29  275045  265655  266465
SLN 1924  2022+05  2321-01  2530-05  2740-17  2733-30  274946  276455  266765
CGI 3205  3317+02  3021+01  2923-04  2935-18  2953-29  296645  287754  277558
COU 3207  3416+02  3415-04  2826-05  2829-18  2841-30  296047  287256  286559
MKC 2214  2509+03  2907-05  2924-06  2728-17  2736-30  285447  286956  286561
SGF 9900  9900+03  2913-02  2923-04  2835-17  2841-29  285845  286754  277063
STL 3109  3322+01  3222-03  2833-04  2929-19  2938-31  295547  297155  286357
DIK      1421+02  1614-04  2211-08  2119-21  2430-35  265152  276960  264360
OMA 2217  2322+04  2511-04  2817-09  2727-18  2735-31  284348  294556  285062
ONL      2119+06  2112-02  2709-08  2818-18  2831-32  283648  274657  274664
ABR 1210  1313+01  2010-05  2616-10  3022-20  2828-34  284650  285759  284260
RAP      1915+08  2316+01  2615-06  2317-20  2430-33  264549  255258  265063
GRB 3511  3522-04  3422-11  3122-15  3034-25  2950-37  306449  306354  284852

```

- a. 5°C.
- b. 2°C.
- c. -5°C.
- d. Not specified.

34. Examine the G-AIRMET product below valid for 1500Z. The freezing level at B could best be described as being at:



- a. The surface.
- b. Approximately 2,000 feet MSL.
- c. Approximately 4,000 feet MSL.
- d. Approximately 6,000 feet MSL.

35. Examine the Low-Level Hazards chart below valid at 06Z on 7 May 2016. Which answer best describes the hazards expected at location B for the valid time?

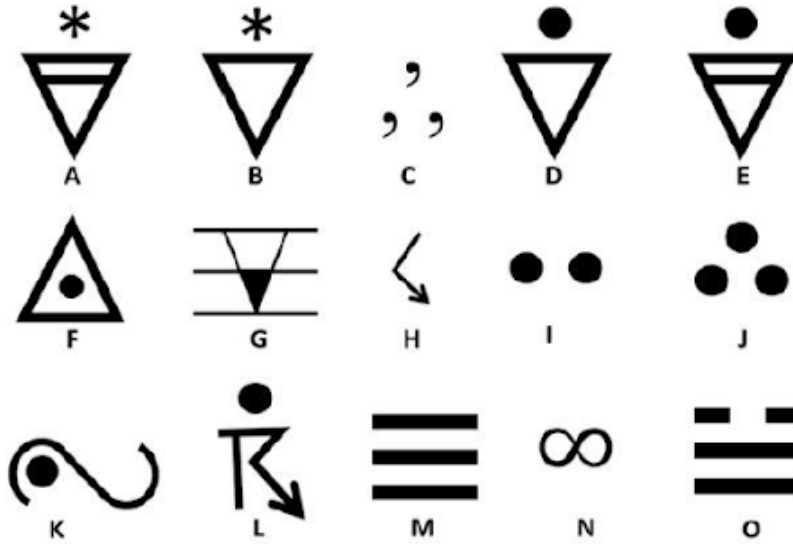


- a. MVFR and moderate or greater turbulence (below 24,000 feet MSL).
- b. IFR and moderate or greater turbulence (above 24,000 feet MSL).
- c. Moderate or greater turbulence (below 24,000 feet MSL).
- d. In-cloud icing and moderate or greater turbulence (above 24,000 feet MSL).

36. Which of the below best describes the issuance times for Convective SIGMET bulletins?

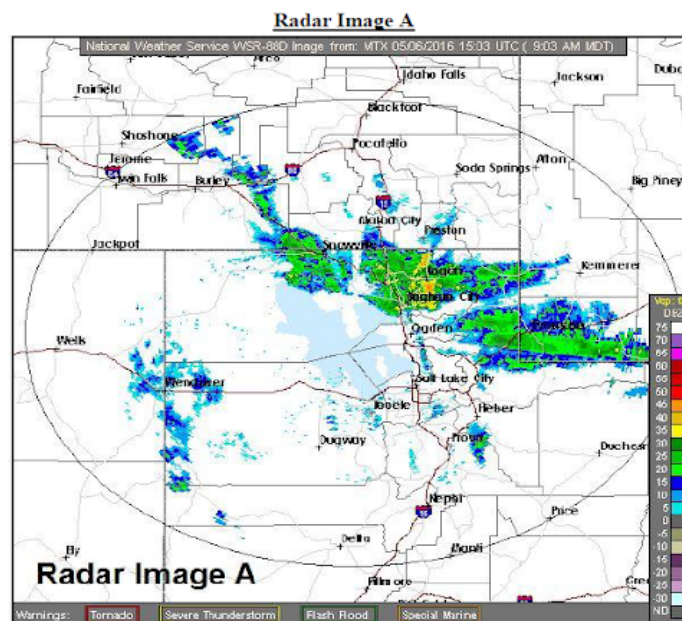
- a. Every hour at 55 minutes past the hour, or as needed.
- b. Every three hours at 00Z, 03Z, 06Z, 09Z, 15Z, 18Z, and 21Z, or as needed.
- c. Every six hours at 00Z, 06Z, 12Z, and 18Z, or as needed.
- d. Every twelve hours at 00Z and 12Z, or as needed.

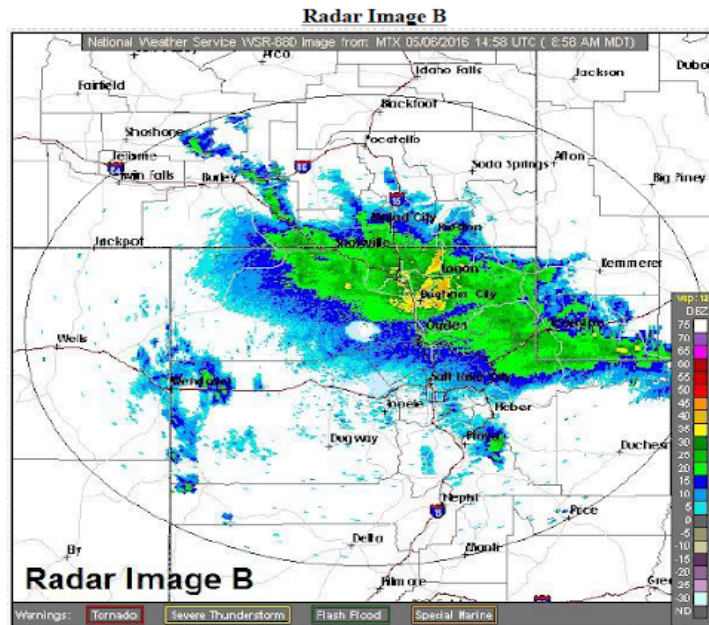
37. Select the letter corresponding to the symbol that would be coded as “VCTS” on a METAR.



- a. Letter E.
- b. Letter H.
- c. Letter F.
- d. Letter L.

38. Examine the two radar images below taken at nearly identical times from the same radar. Which of the images (A or B) is most likely a composite radar image?

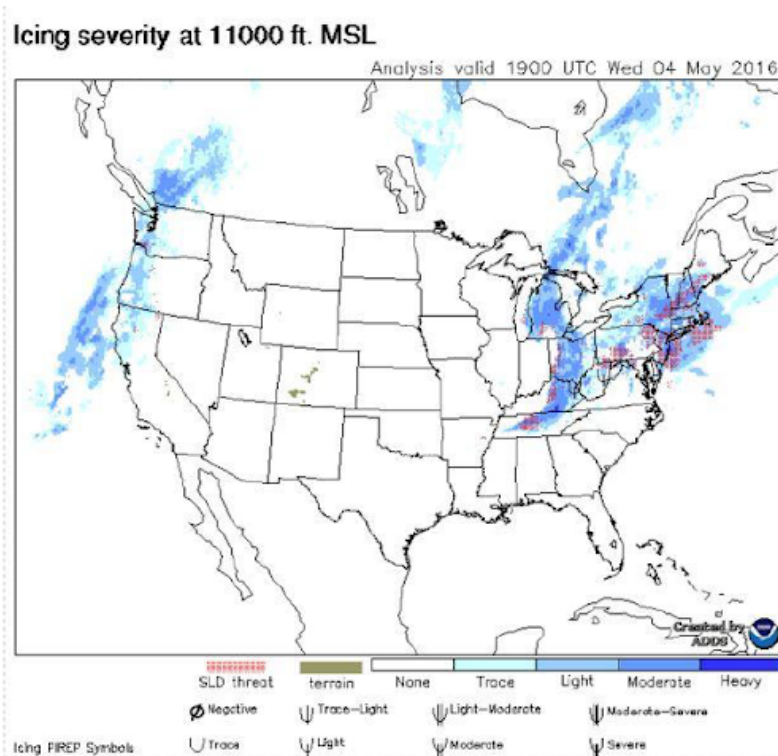




a. Radar image A.

b. Radar image B.

39. Red regions on the Current Icing Product (CIP), such as shown on the image below, indicate the potential for what particularly hazardous icing condition?



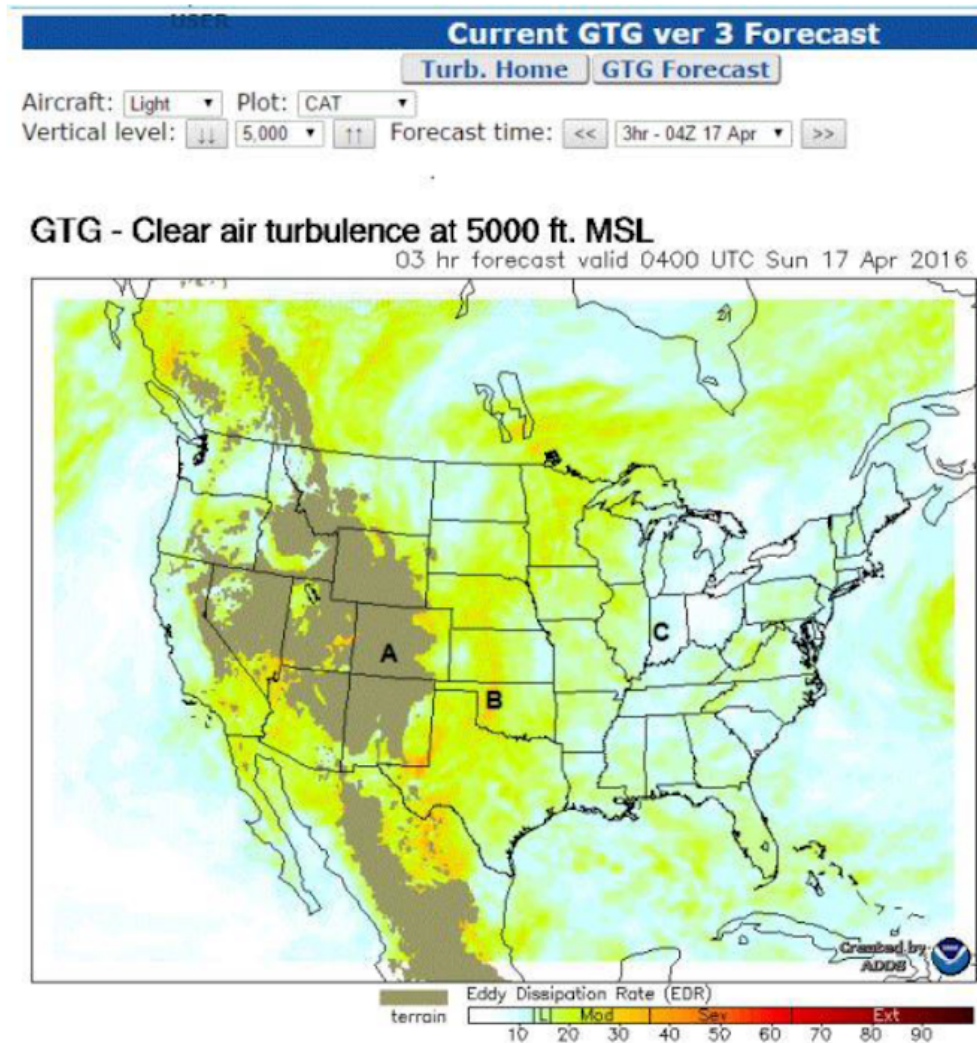
a. Super-cooled large droplets.

b. Severe rime icing.

c. Heavy frost potential.

d. Snow-liquid detrainment.

40. Examine the Graphical Turbulence Guidance (GTG) product below. The product represents the expected conditions for what time?



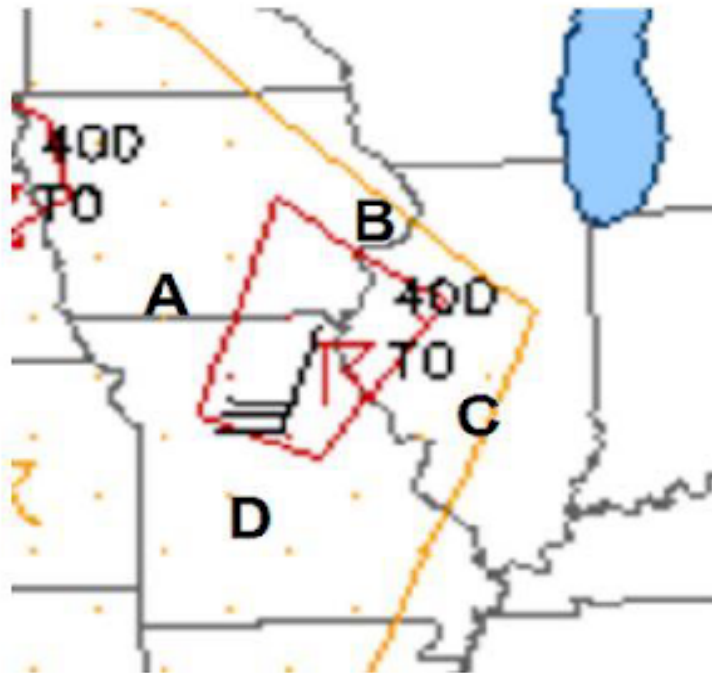
a. 0300Z.

b. 0400Z.

c. 0700Z.

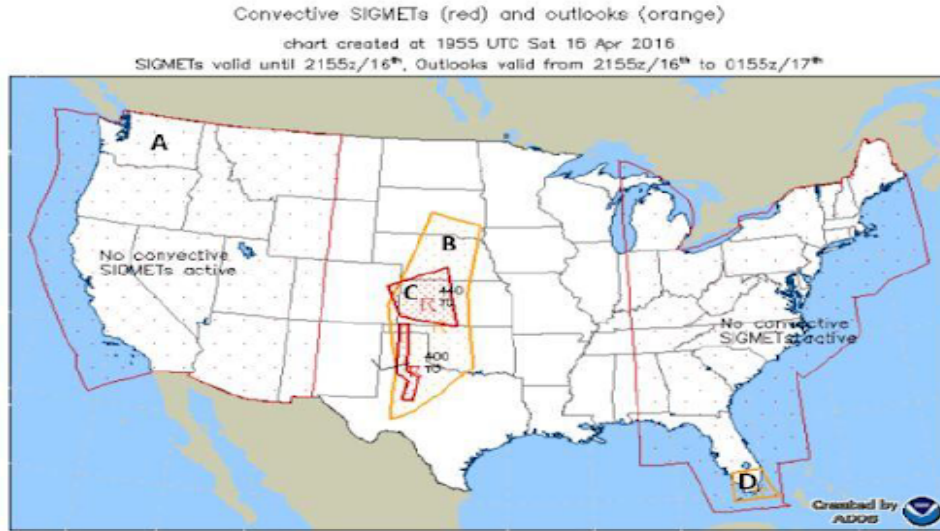
d. The time period between 03-07Z.

41. Examine the portion of a Convective SIGMET shown below. Towards which location would you expect the current convective storms to be moving?



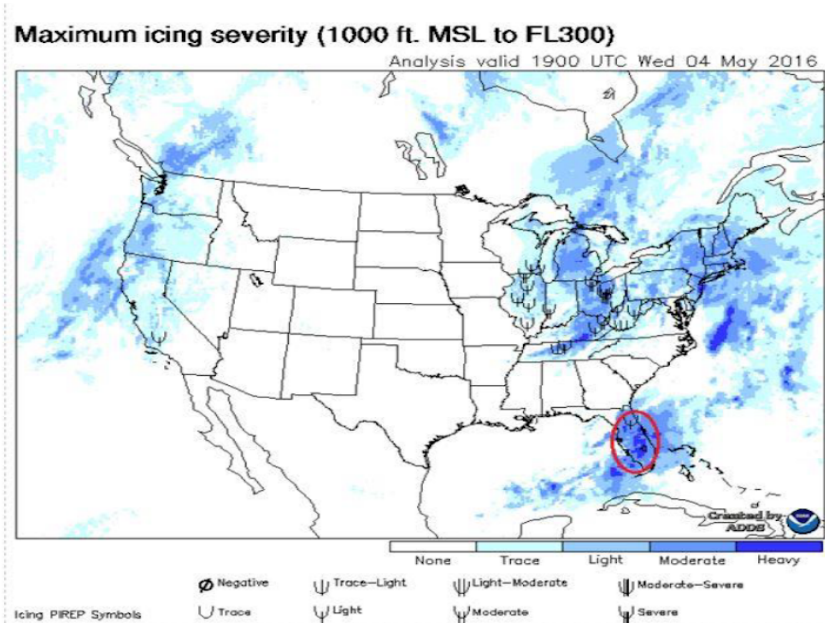
- a. Towards location A.
 - b. Toward location B.**
 - c. Toward location C.
 - d. Toward location D.
42. Referring to the PIREP below, where was the aircraft located at the time of the report?
- UA /OV OMN 200025/TM 1530 /FL UNKN /TP C172 /SK 020 OVC 050 /TB LGT /RM DURD
- a. 20 nautical miles southwest of Ormond Airport, FL (OMN).
 - b. 25 nautical miles south-southwest of Ormond Airport, FL (OMN).**
 - c. 20 nautical miles northeast of Ormond Airport, FL (OMN).
 - d. 25 nautical miles north-northeast of Ormond Airport, FL (OMN).

43. The region in the western Kansas identified by the letter “C” is under a:



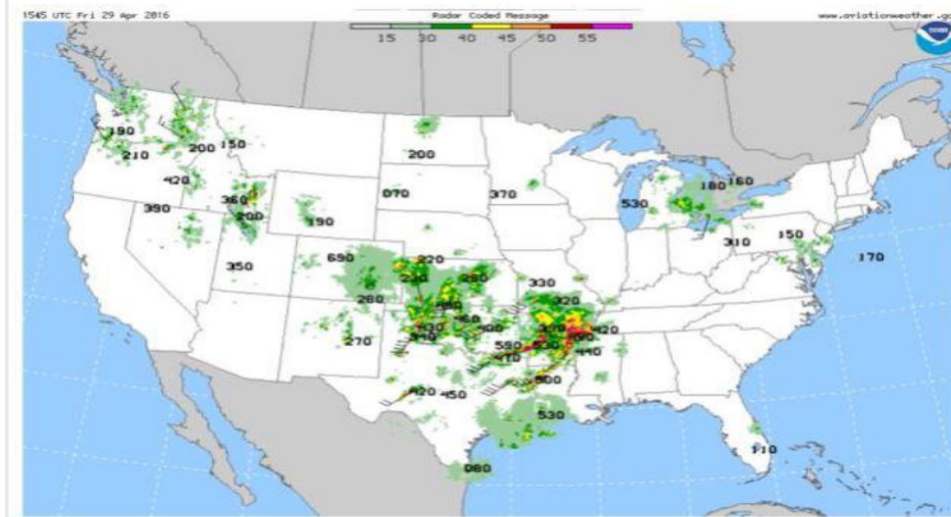
- a. Convective SIGMET valid until 2155Z.
- b. Convective outlook valid from 2155Z to 0155Z.
- c. Convective SIGMET valid until 2155Z and a convective outlook valid for the same time.
- d. Convective SIGMET valid until 2155Z and a convective outlook valid from 2155Z to 0155Z.**

44. Examine the Current Icing Product (CIP) example below. At what altitude would a pilot most likely expect to find the heavy icing in the red-circled area at 1900Z on 04 May 2016?



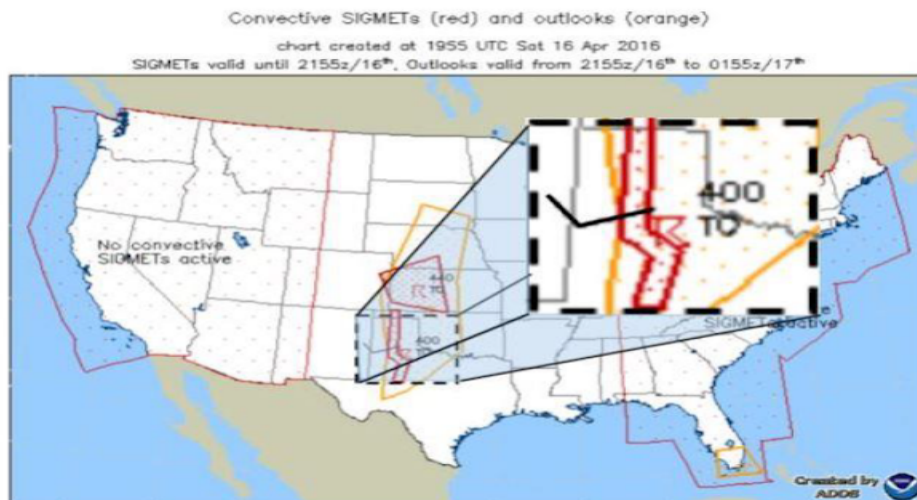
- a. 1,000 feet MSL.
- b. FL300.
- c. All altitudes between 1,000 feet MSL and FL300.
- d. The specific altitude is unspecified. Individual CIP levels would need to be examined.

45. Examine the RADAR Coded Message product below. What do the “wind barb” symbols indicate?



- a. Surface wind speed and direction.
- b. Storm cell speed and direction of movement.
- c. FL180 wind speed and direction.
- d. The average wind speed and direction between the surface and FL180.

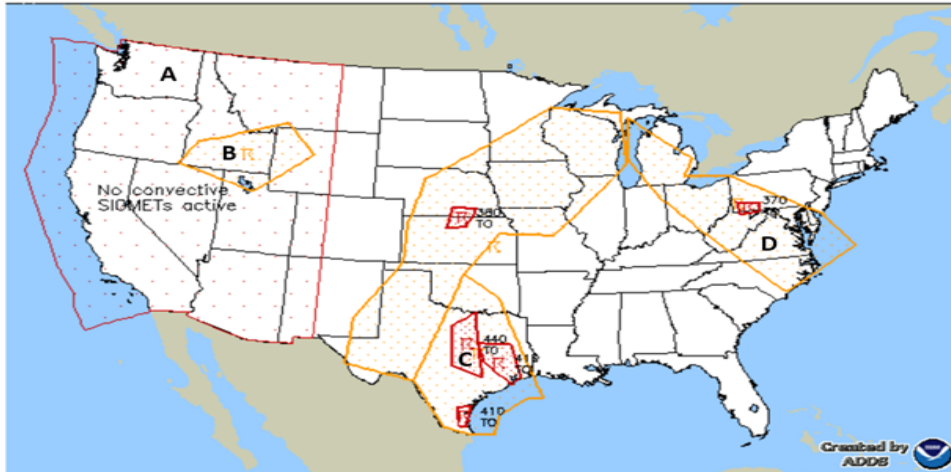
46. Using the Convective SIGMET below, examine the area near northern Texas identified with a dashed box, which has been magnified for easier viewing. What does the “TO 400” imply?



- a. Thunderstorm tops extend up to 40,000 feet (MSL).
- b. The SIGMET is valid until 0400Z.
- c. Up to 40 percent of the highlighted area will be affected by thunderstorm activity.
- d. The line of thunderstorms is up to 400 miles in length.

47. The region in Texas identified by the letter “C” is under a:

Convective SIGMETs (red) and outlooks (orange)
 chart created at 1810 UTC Mon 24 May 2021



- a. Convective SIGMET valid until 2010Z.
- b. Convective outlook valid from 1755Z to 1955Z.
- c. Convective SIGMET valid until 2110Z and a convective outlook valid for the same time.
- d. Convective SIGMET valid until 1955Z and a convective outlook valid from 1955Z to 2355Z.

48. On a METAR from an automated station operating in “AUTO” mode, lightning occurring between 5 and 10 nautical miles of the station with no precipitation detected would be reported as:

- a. VCTS in the main body of the report; no remarks.
- b. LTG VC in the remarks of the report.
- c. -TSRA in the main body of the report; no remarks.
- d. LTG DSNT in the remarks section of the report.

49. Examine the G-AIRMET SIERRA below valid for 0900Z. What hazard is shown in the region labeled “A”?

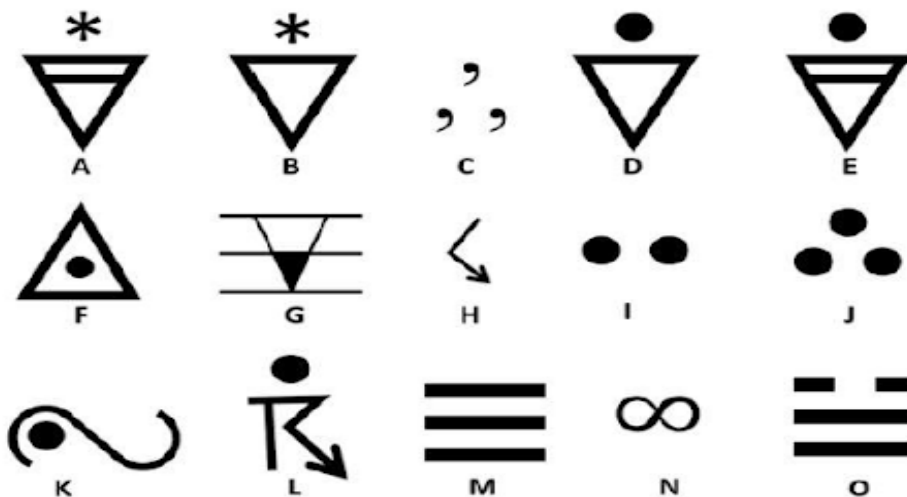


- a. IFR conditions due to patchy mist.
- b. Mountain tops obscured from view due to low clouds, precipitation, and mist.**
- c. MVFR conditions due to low clouds, precipitation, and mist.
- d. Low level turbulence.

50. Once issued, convective SIGMETS are valid for no more than:

- a. One hour.
- b. Two hours.**
- c. Three hours.
- d. Four hours.

51. Select the letter corresponding to the symbol that would be coded as “FZFG” on a METAR.



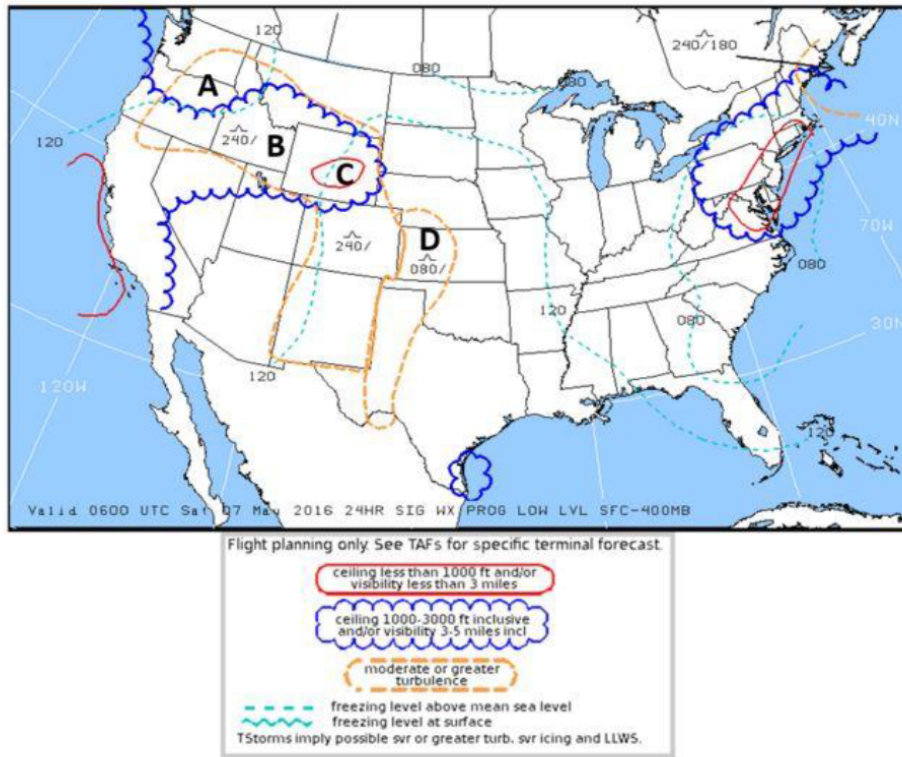
- a. Letter B.
- b. Letter C.
- c. Letter G.
- d. Letter K.

52. The legend at the top of the visible satellite image below indicates:



- a. Percent of reflected sunlight (albedo).
- b. Temperature in degrees Celsius.
- c. Water vapor content in grams per cubic meter.
- d. Amount of particulate matter in parts per million.

53. Examine the Low-Level Hazards chart below valid at 06Z on 7 May 2017. Which answer best describes the hazards expected at location C for the valid time?



- a. MVFR and moderate or greater turbulence (below 24,000 feet MSL).
- b. IFR and moderate or greater turbulence (below 24,000 feet MSL).**
- c. Moderate or greater turbulence (below 8,000 feet MSL).
- d. In-cloud icing and moderate or greater turbulence (above 24,000 feet MSL).

54. The below picture shows NEXRAD radar reflectivity values at different altitudes within the center of the storm resulting from different radar elevation scans. Values shown are decibels of reflectivity (dBZ). A composite reflectivity image would display which dBZ value at the location of the storm?

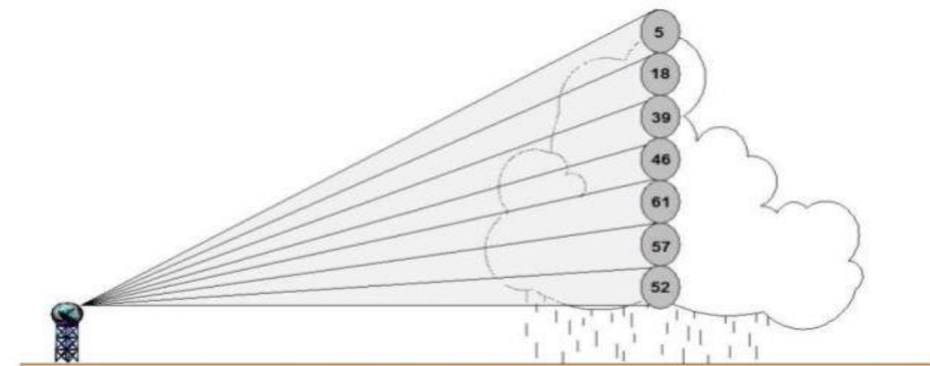
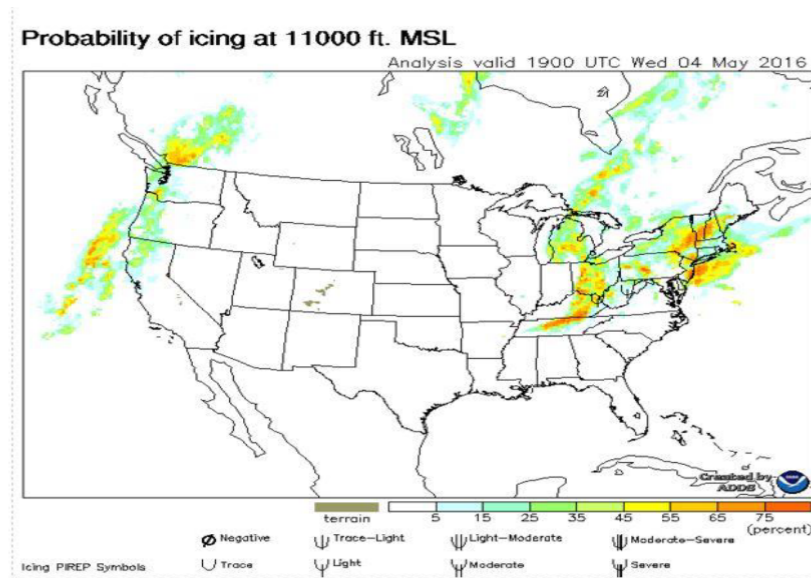


Image 36

- a. 5.
- b. 39.
- c. 61.**
- d. 52.

55. Why is it unsafe for a pilot to fly through a gap between thunderstorms as shown on a real-time cockpit display of ground-based radar data?

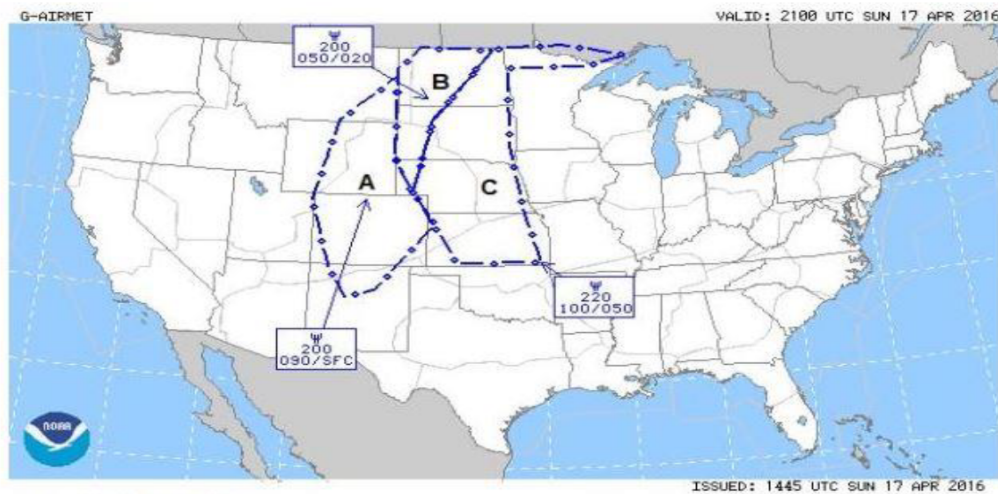


- a. Ground-based radar data cockpit displays are not capable of accurately depicting strong thunderstorms.
- b. Ground-based radar cockpit displays only show recent thunderstorm activity not current storm activity.**
- c. Gaps in ground-based radar echoes often indicate embedded thunderstorms are occurring at that location.
- d. Gaps in ground-based radars are indicative of beam attenuation and possible IFR conditions within the gap.

56. Using the image from question 55, the Current Icing Product (CIP) example provides what useful information for 1900Z on 4 May 2016?

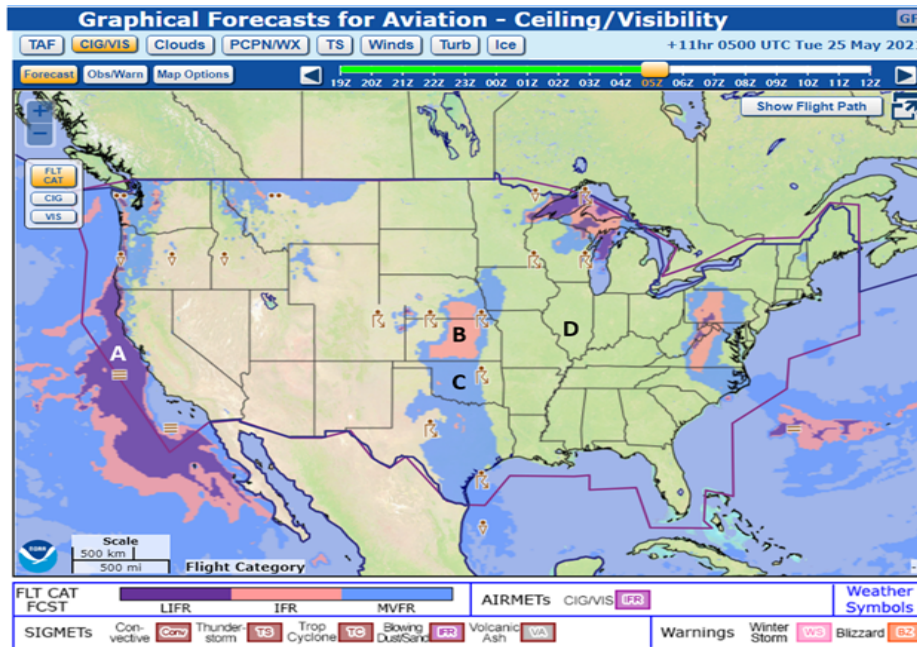
- a. The severity of icing at 11,000 feet MSL.
- b. The probability of encountering moderate or greater icing at 11,000 feet MSL.
- c. The maximum probability of icing regardless of altitude.
- d. The probability of encountering any intensity of icing at 11,000 feet MSL.**

57. Examine the G-AIRMET product below valid for 2100Z. The potential hazard identified near the region labeled “B” is:



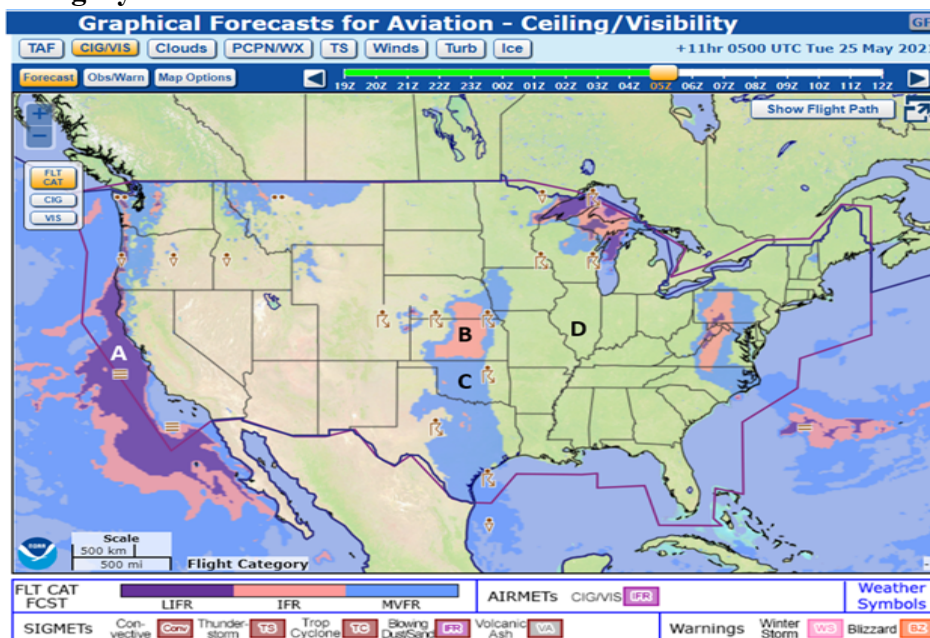
- a. Moderate turbulence.
 - b. Severe turbulence.
 - c. Moderate icing.
 - d. Severe icing.
58. The Outlook portion of a Convective SIGMET Bulletin provides what information?
- a. A 2 hour forecast starting at the end of the bulletin identifying where severe thunderstorm warnings are likely to be issued.
 - b. A 4 hour forecast starting at the end of the bulletin identifying locations of possible Convective SIGMET issuances.
 - c. A 12 hour forecast identifying where severe thunderstorm watches are expected to be issued for the following day.
 - d. 24 hour forecast for enhanced situational awareness only identifying where aviation may be impacted by thunderstorm activity.

59. The region off the coast of California identified by the letter “A” is forecast to have which flight category of weather?



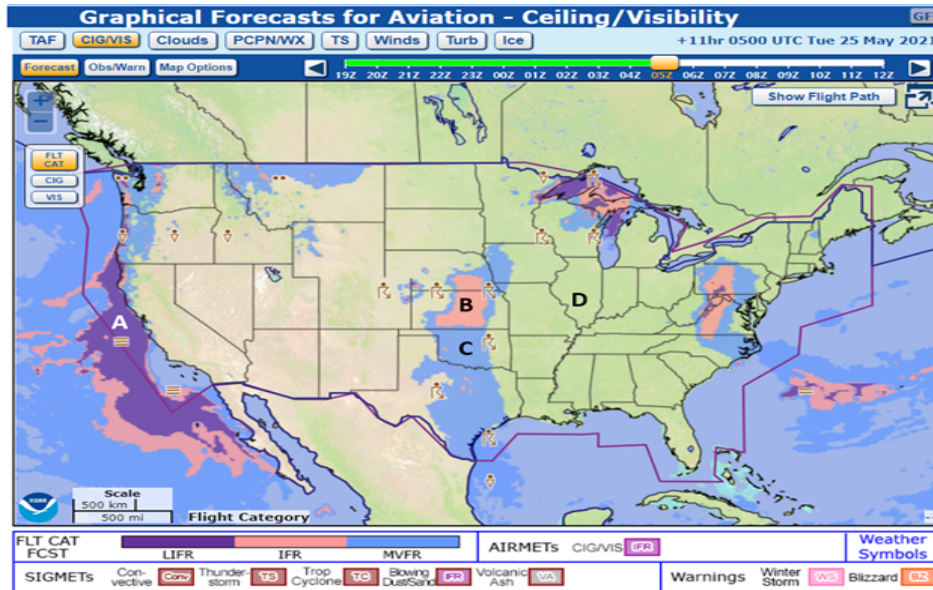
- a. Visual Flight Rules (VFR).
- b. Marginal Visual Flight Rules (MVFR).
- c. Instrument Flight Rules (IFR).
- d. Low Instrument Flight Rules (LIFR).

60. The region in central Kansas identified by the letter “B” is forecast to have which flight category of weather?



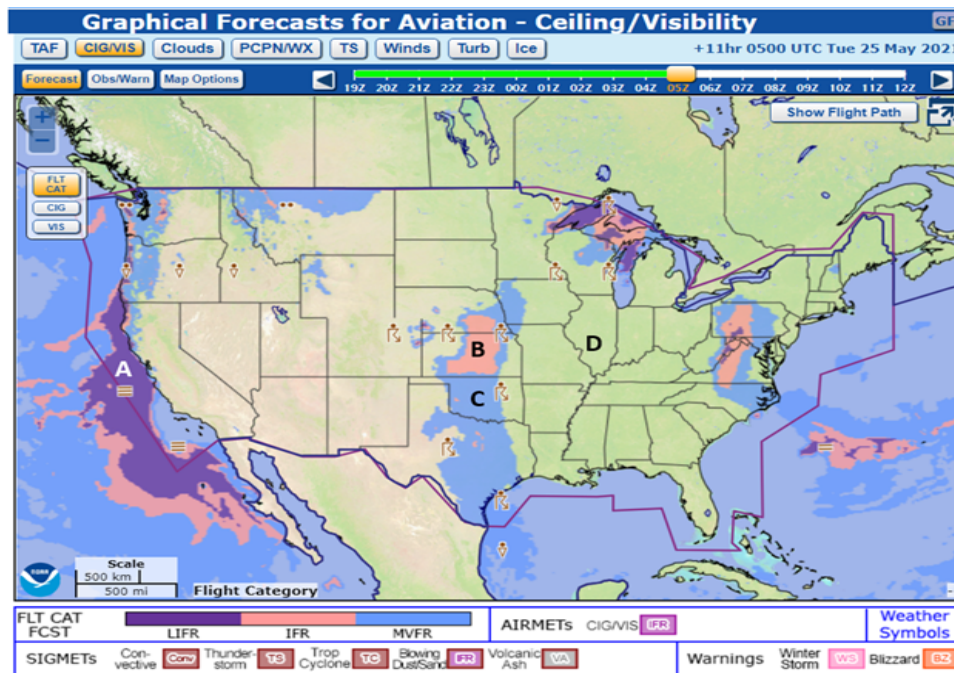
- a. Visual Flight Rules (VFR).
- b. Marginal Visual Flight Rules (MVFR).
- c. Instrument Flight Rules (IFR).**
- d. Low Instrument Flight Rules (LIFR).

61. The region in central Oklahoma identified by the letter “C” is forecast to have which flight category of weather?



- a. Visual Flight Rules (VFR).
- b. Marginal Visual Flight Rules (MVFR).**
- c. Instrument Flight Rules (IFR).
- d. Low Instrument Flight Rules (LIFR).

62. The region in southern Illinois identified by the letter “D” is forecast to have which flight category of weather?



- a. Visual Flight Rules (VFR).
- b. Marginal Visual Flight Rules (MVFR).
- c. Instrument Flight Rules (IFR).
- d. Low Instrument Flight Rules (LIFR).

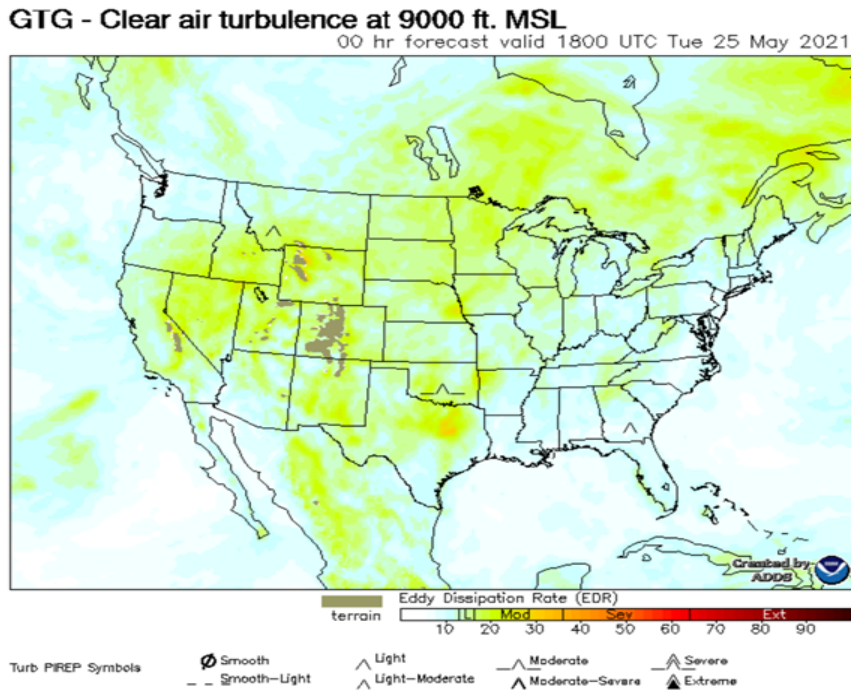
63. What does “UUA” in the below PIREP indicate?

ANE UUA /OV ANE/TM 1355/FL002/TP BE23/RM LLWS -10KT 002-SFC

- a. The nearest NAVAID to where the observation was taken.
- b. The PIREP is urgent, due to low-level wind shear.
- c. The PIREP was observed at an unknown upper-altitude.
- d. The ARTCC center is processing the report.

64. Examine the GTG Product below. The product shows the Eddy Dissipation Rate (EDR) caused by Clear Air Turbulence at 9,000 feet for a light aircraft. Turbulence intensity is indicated by the severity markers on the legend (Lgt, Mod, Sev, Ext). If a heavy aircraft were selected instead, the EDR maximum over east Texas would _____ and the severity markers would _____.

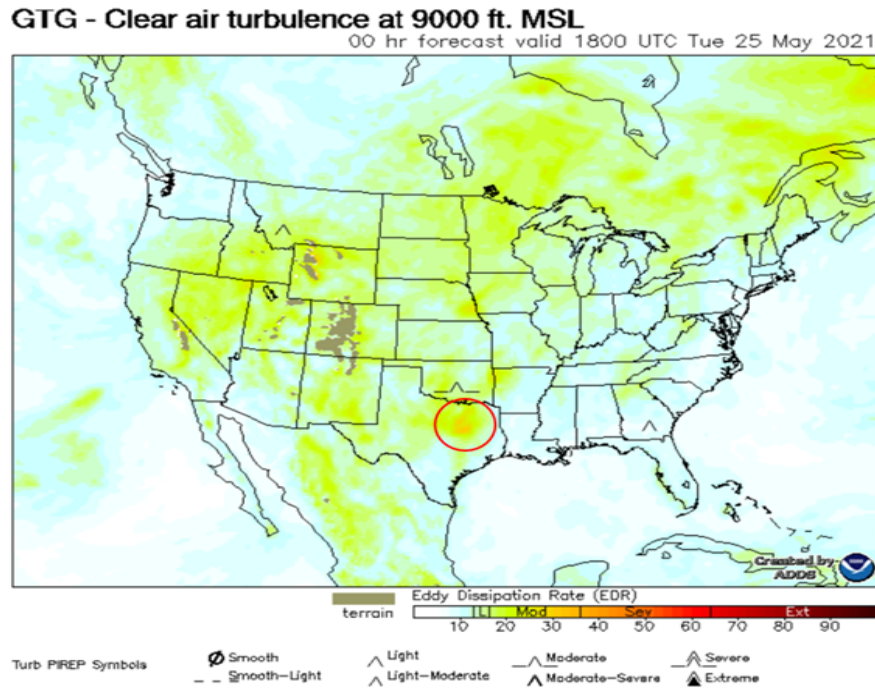
Aircraft: Light Plot: CAT Vert. level: 9,000 Time: 00hr - 18Z 25 May



- Increase; shift right.
- Decrease; shift left.
- No change; shift left.
- Decrease; remain fixed.

65. Examine the GTG Product below. The Eddy Dissipation Rate (EDR) values over eastern Texas (circled) indicate _____ intensity of turbulence would be expected at 9,000 feet for a light aircraft at 18Z on 25 May?

Aircraft: Light Plot: CAT Vert. level: 9,000 Time: 00hr - 18Z 25 May



- a. Light.
- b. Moderate.
- c. Severe.
- d. Extreme.